A COMPARATIVE STUDY BETWEEN CORRIDOR WALKING (CW) AND TREADMILL WALKING (TMW) FOR ASSESSMENT OF EXERCISE TOLERANCE IN CHRONIC BRONCHITIS PATIENTS

REGISTER NUMBER: 27091203

A DISSERTATION SUBMITTED TO
THE TAMIL NADU DR.M.G.R.MEDICAL UNIVERSITY, CHENNAI
IN PARTIAL FULFILLMENT FOR THE
REQUIREMENTS OF THE DEGREE IN
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HEAD OF THE INSTITUTION : _____

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Prof. R. SHANKER, M.P.T.,(OG)
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TRINITY MISSION AND MEDICAL FOUNDATION
MADURAI -625020.

EXAMINERS : _____

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CERTIFICATE

This is to certify that the dissertation work entitled **"A COMPARITIVE STUDY BETWEEN CORRIDOR WALKING (CW) AND TREADMILL WALKING (TMW) FOR ASSESSMENT OF EXERCISE TOLERANCE IN CHRONIC BRONCHITIS PATIENT"** was done by **RM. MUTHULAKSHMI** a bonafied student of master of physiotherapy under the **TAMIL NADU Dr. MGR MEDICAL UNIVERSITY, CHENNAI.**

Register Number : 27091203

PROJECT GUIDE

Prof. B. RAMKUMAR, M.P.T.,(CARDIO)
vice principal, TMMF, Madurai

ACKNOWLEDGEMENTS

I take this opportunity with pleasure to thank everyone who helped me to complete this dissertation successfully.

I express my gratitude to **Prof. K.R. ARUMUGAM,** The **chairman**, Trinity Mission And Medical Foundation for his Valuable Support.

I am extremely grateful to **Prof. R. SHANKER M.P.T.,(OG) The Principal**, College of Physiotherapy, Trinity Mission and Medical Foundation, to successfully complete the Dissertation.

It's my Privilege to thank my physical therapy project Guide, **Prof B. RAMKUMAR M.P.T (CARDIO) vice principal** who merits special recognition for his support and leadership in his work.

I thank from deep hearted to **Mr. J. SUDHARSAN, M.P.T.,(CARDIO)** who was responsible for synthesizing the diverse and detailed feedback into the final cohesive document instrumental to guiding the initiative.

My Special Thanks in Particular to the Key Informants Listed Below:

My project would be incomplete without the support and encouragement of my beloved parents **Mr. SP. RAMAKRISHNAN** and **Mrs. RM. ANANTHAVALLI** and My Sisters **MEENU** and **INDHU.**

I am also thankful to the staffs of our Physiotherapy Department and librarian for their co operation towards the completion of this dissertation.

Besides my conscience feels it's is my responsibility in praising and thanking my **LORD** who alone is worthy of honor and glory.

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INTRODUCTION

Chronic bronchitis patients experience shortness of breath when the use their arms and shoulders. This in turn can lead to loss of strength and further increases problems of breathing. Exercises can help the patients to lead an active life style.

Chronic bronchitis defined as excessive mucus secretions (or) recurrent mucus producing cough that lasts 3 (or) more months and recurs year after year.

In diagnosis chronic bronchitis it is important to rule out all the other causes that can produce recurrent cough.

Cigarette smoking is the most important risk factor for the development of chronic bronchitis. Over 90% of patients with chronic bronchitis have smoking habits. Although only 15% of all cigarette smokers are ultimately diagnosed with some form of obstructive airway disease.

It is the 4th leading cause of death in United States. About 10 million Americans are affected by some degree of chronic bronchitis. It causes 40,000 deaths annually in United States.

Approximately 20% of the males have chronic bronchitis and the prevalence of women also increases with increase in their smoking habits. The mortality rate has risen by nearly 32.9% between 1979 and 1991 a statement released by WHO in 2002.

In chronic bronchitis there is a respiratory flow limitation, which leads to respiratory muscle utilization, which in turn leads to their deterioration. Therefore accessory inspiratory muscles are called for during respiration. This lessons the mechanical advantage. These changes lead to normal ventilator parameters and reduce functional exercise tolerance.

In respiratory medicine several decades of investigation have been directed at the effects of exercise trained.

FR LAKE ET AL., in 1990 concluded that exercise transiting improves performance in chronic bronchitis.

Several studies have concluded that training exercises to these chronic bronchitis patients reduces the increased metabolic demand and improves ventilation.

In chronic bronchitis due to excessive mucus secretion the lung function and exercise tolerance is reduced. It is also the duty of physiotherapist to prescribe the appropriate exercises.

In this study we going to prescribe corridor walking and treadmill walking to improve the lung function and by which means the exercise tolerance is higher is going to be assessed.

AIM OF THE STUDY

To assess the exercise tolerance in chronic bronchitis patients using walking distance, heart rate and Borg scale by means of corridor walking and Treadmill walking.

NEED FOR THE STUDY

This study is aimed to improve the efficiency of lung function, in chronic bronchitis patients.

The study was undertaken to compare a 2,6 and 12 minutes corridor walking procedure with a treadmill walking procedure using heart rate, walking distance, and Borg scale measurement in order to evaluate which of the three procedures is preferable for assessment of exercise tolerance in patient with Chronic Bronchitis.

The maximum distance walked in a given period is frequently used as simple method to evaluate exercise tolerance in patients suffering from chronic bronchitis.

Typically, patients walk on treadmill or in a corridor walking at a self-paced speed little information is available about the difference between exercise performances of the patients with chronic bronchitis. When using the two tests therefore, we compared 12 minute corridor walking and 12 minute self-paced treadmill walking in 15 patients with chronic bronchitis.

Distances covered in 12,6,2 minutes and walking speed were significantly higher during corridor walking than during treadmill walking. Heart rate values during the procedures were not significantly different and almost same degree of breathlessness was found after both test.

Some patients find difficulty to walk on treadmill, the comparative study illustrates that corridor walking as simple and easy form of exercise testing. Corridor walking appears to be more efficient than treadmill walking because the patients are more familiar with walking in corridor than on a treadmill.

STATEMENT OF THE PROBLEM

Comparison of exercise tolerance testing between corridor walking (CW) and treadmill walking (TMW) test for chronic bronchitis patients.

OBJECTIVES

To improve respiratory fitness through breathing exercise and improver exercise tolerance and improve walking distance in chronic bronchitis patients.

OPERATIONAL DEFINITIONS

FEV_1 –

The volume of air forcibly expired after a maximam inspiration in one second and this is usually 80% fvc. Thus the ration fev_1/fvc in healthy people is 80%.

HEART RATE

The number of contractions of the cardiac ventricles per unit of time.

BORG SCALE

Scale used for ratings of perceived exertion (RPE). Original Scale (6-19) above and revised briefer scale (1-10) below. These Scale are related by physiologic stress and can be used to establish exercise intensity.

HYPOTHESIS

Corridor walking has improved the exercise tolerance and walking distance more than treadmill walking in Chronic bronchitis patients.

NULL HYPOTHESIS

Corridor walking has not improved the exercise tolerance and walking distance more than treadmill walking in chronic bronchitis patients.

OUTCOMES

I hope that outcomes shall rely on the hypothesis, it is a very need and purposive study for walking in chronic bronchitis patients in India to improve exercise tolerance in those patients.

ANATOMY OF THE LUNGS

Lungs are pair of respiratory organ situated in the thoracic cavity. The right lung and left lungs are separated by the mediastinum.

The lungs are spongy in texture. In the young the lungs are brown or grey in colour. Gradually they become mottled black because of the deposition of inhaled carbon particles.

SHAPE

Each lung is conical shape, it has

A. An apex at the upper end

B. A base resting on the diaphragm

C. Two surfaces

medial surface and costal surface

D. Three Borders

Anterior, Inferior and Posterior

- The apex is blunt and lies above the level of the anterior end of the first rib.
- The base is semilunar and concave.
- The anterior border is very thin

- ❖ The posterior border is thick and ill defined.
- ❖ The inferior border separates the base from the costal and medial surface.
- ❖ The costal surface is large and convex.
- ❖ The medial surface is divided into a posterior or vertebral part and an anterior or mediastinal part.

SIZE

- ❖ The right lung weight about 650gm. It is about 50gm heavier than the left lung.

The Right Lung Is Divided Into Three Lobes by 2 fissures

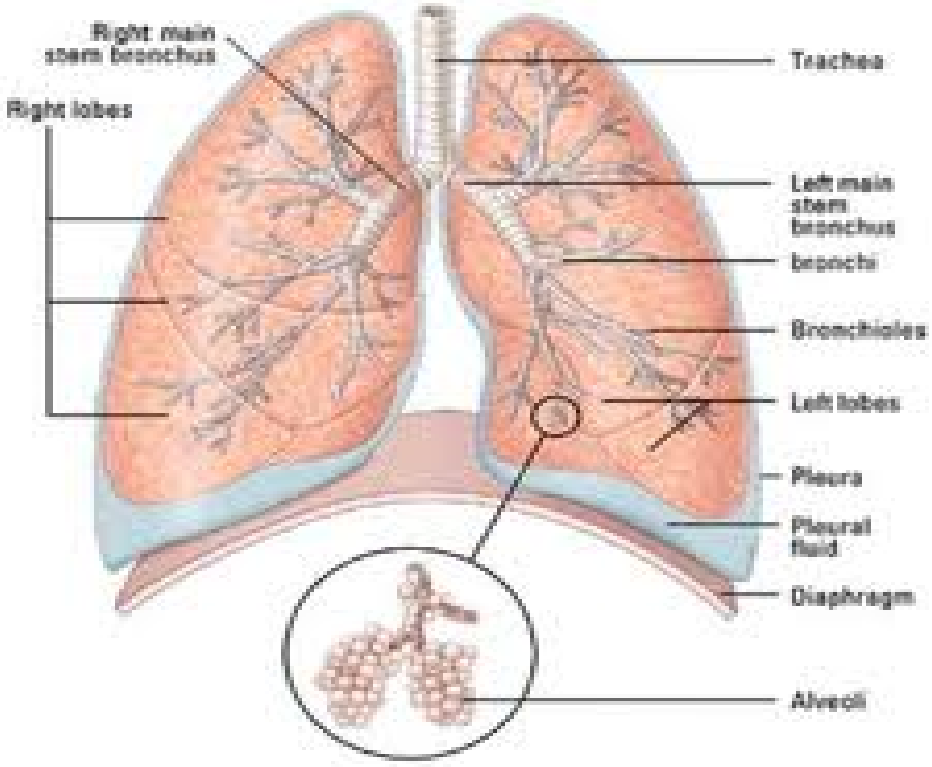
FISSURES

- Oblique
- Horizontal

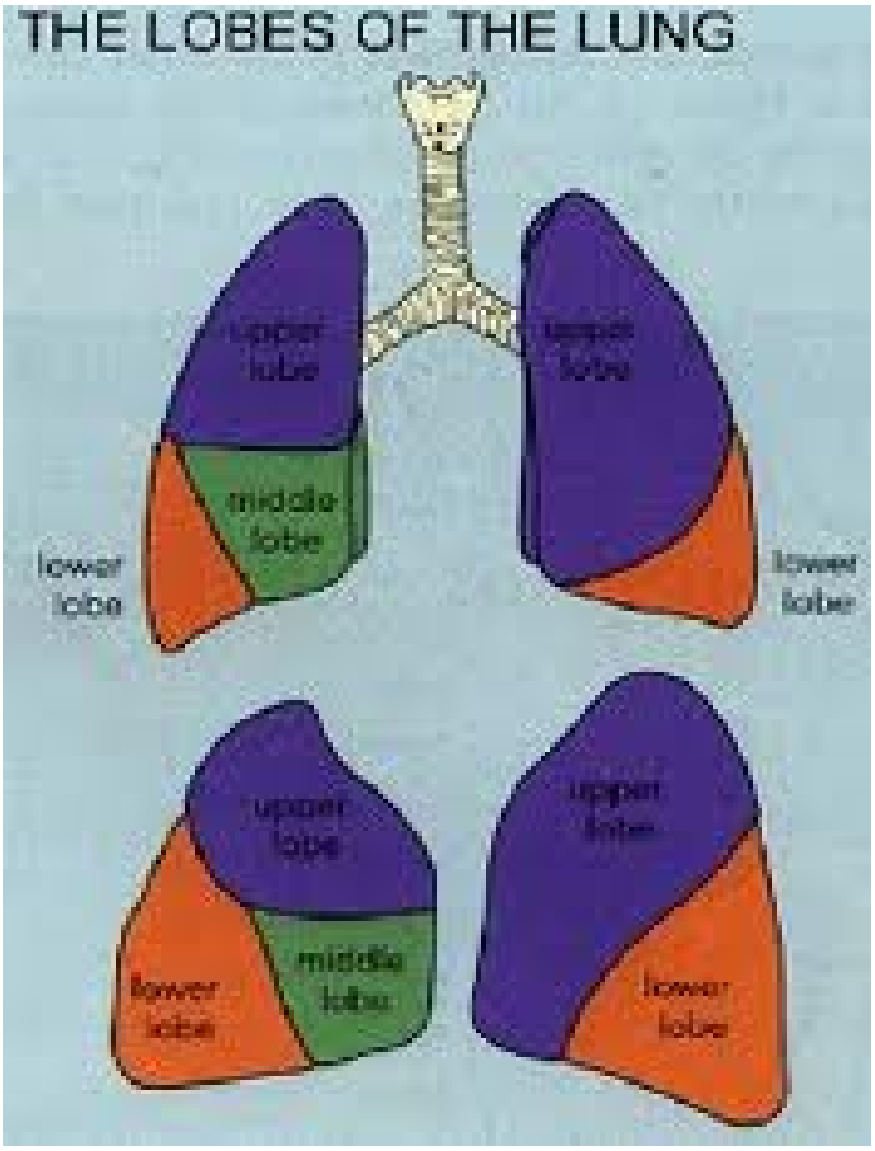
LOBES

- Superior lobe
- Middle lobe
- Inferior lobe

ANATOMY OF THE LUNGS



THE LOBES OF THE LUNGS



The Left Lung Is Divided Into Two Lobes By The Oblique Fissures.

- ❖ The tongue shaped projection of the left lung below the cardiac notch is called the lingual. It corresponds to the middle of the right lung.
- ❖ The lungs expand maximum in the inferior direction because movements of the thoracic wall and diaphragm are maximum towards the base of the lung.

2. Arterial Supply of the Lungs

The bronical arteries supply nutrition to the bronchial tree and to the pulmonary tissue.

3. Venous Drainage of the Lungs

The venous blood from the lungs drain through the bronchial veins into the azygos and hemiazygos veins.

4. Nerve Supply of the Lungs

Parasympathetic nerves are derived from the vagus. These fibres are

a) Motor to the bronical muscles

b) Secretomotor to the mucus glands of the bronical tree.

c) Sensory are responsible for stretch reflex of the lungs and for the cough reflex.

Sympathetic nerves are derived from spinal segments **T2** to **T5**

BRONCHO PULMONARY SEGMENTS

These are well defined sectors of the lung, each one of the which is aereated by a tertiary (or) segmented bronchus. Each segment is pyramidal in shape with its apex directed towards the root of the lung.

1) Segmental Bronchi & Bronchopulmonary Segments

RIGHT LUNG

UPPER LOBE

i) Apical bronchus
ii) Anterior bronchus
iii) Posterior bronchus

MIDDLE LOBE

i) Medial bronchus
ii) Lateral bronchus

LOWER LOBE

i) Superior
ii) Anterior bastal
iii) Posterio basal
iv) Lateral basal

LEFT LUNG

UPPER LOBE

i) Apicoposterior
ii) Anterior
iii) Superior lingular
iv) Inferior lingular

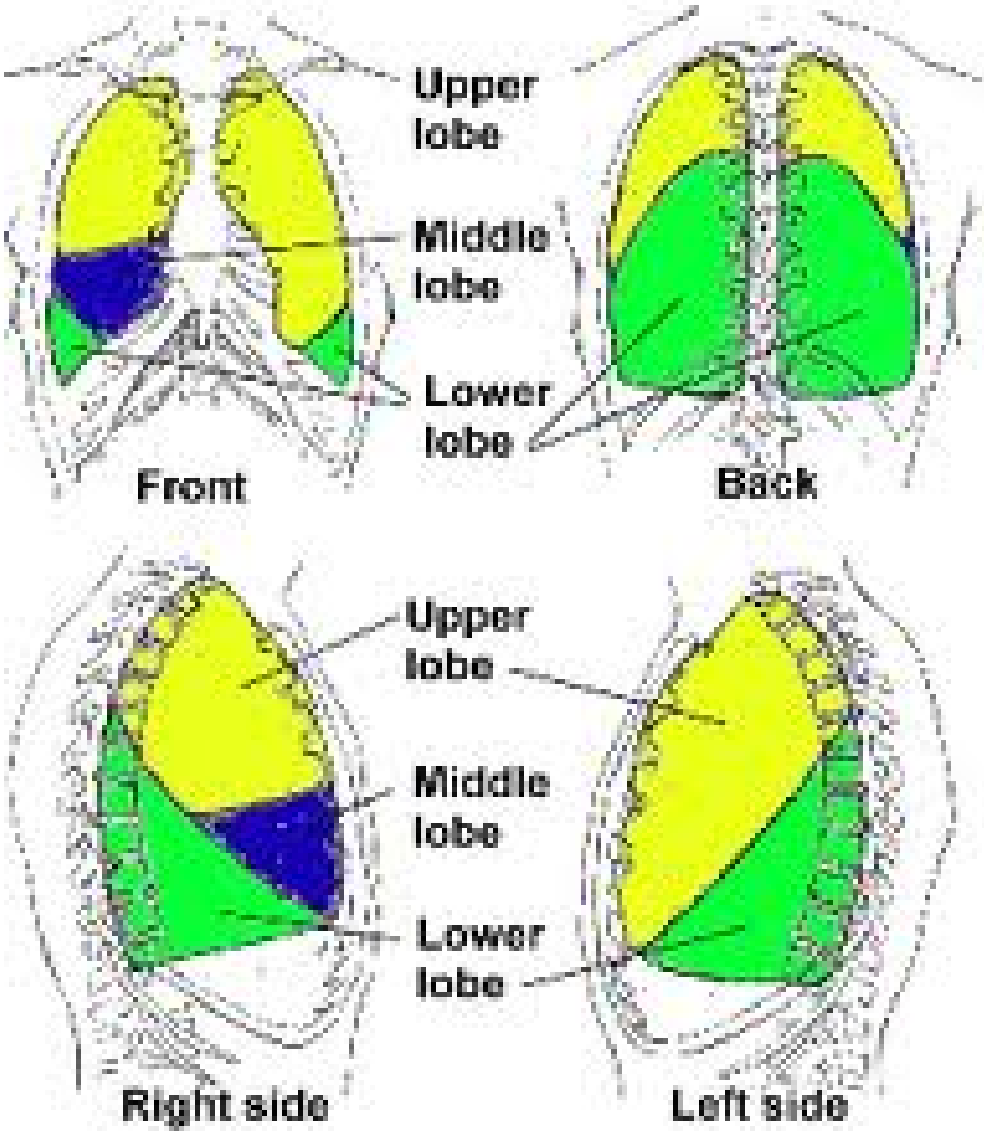
LOWER LOBE

i) Superior(Apical or Dorsal)
ii) Anteromedial basal
iii) Posterior basal
iv) Lateral basal

THORACIC WALL

- Thoracic Wall is covered by skin, superficial fascia, deep fascia and extrinsic muscles
- The thoracic cage forms the skeletal framework of the wall of he thorax. The gaps between the ribs are called the intercostal spaces.
- They are filled by the intercoastal muscles and contain the inter costal nerves, vessels and lymphatics.

BRONCHO PULMONARY SEGMENTS



INTER COSTAL MUSCLES

- External intercostal muscles
- Internal intercostal muscles
- Transverses Thoracis Muscles

Transverses Thoracis Muscles are divisible into 3 parts

- Intercostals intima.
- Sternocostalis
- Subcostalis

ACTION OF THE INTER COSTAL MUSCLES

- The main action of intercostals muscles is to prevent retraction of the intercostal spaces during expiration and their bulging outwards during inspiration

- The external intercostal and the levator costal may elevate the ribs during inspiration.

- The internal intercostals and transverse thoracis may depress the ribs (or) cartilage during expiration.

PATHOPHYSIOLOGY OF CHRONIC BRONCHITIS

Hyper trophy and increases in number of mucous glands in the large bronchi

↓

Inflamatory changes in the small airways

↓

Some irritative substances stimulates over activity of the mucous secreting glands and the goblet cells in the bronchi and bronchioles

↓

Causes secretion of excess mucous

The cells increase in size and the ducts become dilated

↓

Occupy as much as conflamatory changes two-thirds of well thickness

↓

Te airways become narrowed and inflammatory changes which results in mucosal edema.

↓

Decreasing the diameter of the airways

↓

The ciliary action is also inhibited

↓

The airways obstruction is enhanced during expiration with resulting trapping of air in the alveoli.

↓

The lung gradually lose their elasticity as the disease.

REVIEW OF LITERATURE

Beaumont A. Cockroft A, Guz A. Treadmill walking test for breathless patients. Thorax. 1985 ; 40:459-464.

Alson JA. Samios R. Anderson SD, evaluation of exercise training in patients with chronic airway obstruction. Phys ther, 1981; 61:1273-1277.

Mungall IPF, Hainsworth R, Assement of repiratory function in patients with chronic airways disease. Thorax 1979;34:254-258.

ASTRAND P.O et al., (1965)

Conducted a comparative study, to find the effect of treadmill and corridor walking in cardio pulmonary response heart rate, distance to the chronic bronchitis patients between 40-50 age group.

MADSE et al

The measurement at maximal walking distance during defined times has been introduced as a test to evaluate exercise tolerance in patients suffering from chronic bronchitis.

Timed maximal walking distance are frequently used to moister responses to exercise training programs.

In some studies however , exercise capacity was evaluated by walking along a corridor whereas, in a study by madser et al. Patients were asked to walk in a treadmill during a determined period of time.

BEAUMONT et al

Corridor walking and treadmill walking were compared in the same group of patients with chronic bronchitis the authors found no significant difference in the distance covered during the procedures, and they concluded that the patients walked on the treadmill to the same way as CW in the corridor.

MUNGAL PF.,

Hainsworth, R assessment of cardio respiratory function and training to patients.

RASMUSSEN B et al., (1975)

Conducted a comparitive study to find out the effect of corridor walking and treadmill walking training on pulmonary function (FEVI, FVC), in chronic bronchitis patients.

SARTORIO et al., (2003)

Conducted an comparitive experimental study to determine effect of heart rate and work capacity of 6 week integrated treadmill and corridor walking exercise in chronic bronchitis patients of treadmill walking at a constant metabolic load. The result of this study significant increase in VO2 max an improving quality of like in both training.

SCOTT IRWIN (1985) JAN STEPHEN TECHIN(1990)

Chronic bronchitis is more common on men and in individuals older than 40 years. They also reported that this do has a strong association with cigarette smoking. According to American lung association , smoking is the leading cause of development of chronic bronchitis.

Riesetal, Ellis B(1988); concluded that breathing training may be beneficial in the rehabilitation of patients with bronchitis.

Sturdy G.et al has demonstrated that high intensity, interval based respiratory muscle training is feasible in patients with moderate to severe bronchitis resulting in significant improvements in respiratory muscle strength and endurance and thereby significant improvement in pulmonary functions when performed three times a week for 8 weeks.

Casiari RJ(1981),Machid h (1999); evaluated the effects of breathing exercises. In this study concluded that exercise tolerance and endurance in chronic bronchitis patients has been improved.

Weiner. P, Magadle et al; Suggested that inspiration muscle training results in improvement in performance exercise capacity and is sensation of dyspnoea Herman HL(1998), Muller et al(1970), Uvalde(2000) Baic(1991) found significant improve in forced expiratory volume.

Kotoh.j.et.al(1994)

Concluded in experimental study find out effects of exercise tolerance on chromic bronchitis patients for the period of 3 months. The result of this study showed significant improvement in fvc and FEV1

Jakicic. Jm.,et al(1995)

Concluded an experimental study to determine the effects of exercise tolerance in thronic bronchitis patients trained 12 weeks of intense aerobic treadmill training for 4 days/week. The result of this study show a statistical significant improvement in aerobic fitness.

METHODOLOGY

MATERIALS USED

1. Treadmill
2. Stethoscope
3. Corridor

TREADMILL

Treadmill consist of a motor driven conveyor belt and provides sufficient space for fast running One end of the treadmill may be elevated. So that can upgrade locomotion id possible. It involves larger muscle mass of body. In this study the researcher tried to find the exercise tolerance of chronic bronchitis patient.

CORRIDOR WALKING

12, 6, 2 Minutes of free corridor walking in which the patients is asked to cover as much distance as possible during a defined period with stops for a breather when necessary. At least two practice walks are required to improve subsequent reproductibility of the test and like most exercise studies. Motivation is an important factor.

THE BORG CATEGORY SCALE FOR RATING BREATHLESSNESS (ORIGINAL RPE SCALE)

6 -

7 - Very Very Light

8 -

9 - Very Light

10 -

11 - Fairly Light

12 -

13 - Somewhat Hard

14 -

15 - Hard

16 -

17 - Very Hard

18 -

19 - Very Very Hard

THE BORG CATEGORY SCALE FOR RATING BREATHLESSNESS (MODIFIED RPE SCALE)

0	-	Nothing at all
0.5	-	Very Very Slight (Just Noticeable)
1	-	Very Slight
2	-	Slight
3	-	Moderate
4	-	Some hat Severe
5	-	Severe
6	-	Severe
7	-	Very Severe
8	-	Very Severe
9	-	Very Very Severe
10	-	Maximum

STUDY DESIGN

A comparative study

STUDY SAMPLING

A total of 15 subjects those who have chronic bronchitis patients have taken from Meenakshi Mission Hospital and Apollo Hospital, Madurai.

STUDY SETTING

The study was conducted at Ultra Mission Hospital and study sample taken from physiotherapy department of Meenakshi Mission Hospital and Apollo Hospital, Madurai with consultation concerned authority.

CREITERIA FOR SELECTION

Inclusion Criteria

- ✓ Males
- ✓ Age group 40-50
- ✓ Mild airway obstruction
- ✓ FEV 1 40-50%

Exclusion Criteria

- ✓ Cardio vascular disease
- ✓ Neurological disease
- ✓ Locomotor disease
- ✓ Diabetes
- ✓ Hypertension

PROCEDURE

A total of 15 Chronic bronchitis patients from Meenakshi Mission Hospital and Apollo Hospital, Madurai. They were selected according to the selection criteria.

INSTRUCTION

1. Patients were instructed not to undergo test in empty stomach
2. The patient were instructed to wear suitable dress
3. The patient were instructed to inform immediately, if they get any giddiness, discomfort during or after test.
4. The therapist for assistance were instructed for clear observation of the patients while performing the test.
5. Patient explained about the treadmill and method of performANCE in the test.

PROTOCOL

Number of Day	Session	Test	Minute
Day I	Morning	TMW	12 minute
	Evening	CW	12 minute
Day II	Morning	TMW	6 minute
	Evening	CW	6 minute
Day III	Morning	TMW	2 minute
	Evening	CW	2 minute

THE TREADMILL

PATIENT PERFORMANCE TREADMILL WALKING

PATIENT PERFORMING CORRIDOR WALKING

ASSESSING THE PATIENTS HEART RATE

DATA ANALYSIS

The paired 't' test was carried out to compare the differences between treadmill walking and corridor walking within the single group.

$$S = \sqrt{\frac{\sum (D - \overline{D})\,2}{n-1}}$$

$$\text{'t' test} = \frac{\left| d - 0 \right|}{s / \sqrt{n}}$$

TABLE – 1

DISTRIBUTION OF PATIENTS ACCORDING TO AGE GROUP

S.No	Age group	Number of Patients	Number of Patients in percentage
1.	40-45	11	73.2
2.	46-50	4	26.8

Table – 1 shows the distribution of patients according to their age group.

Totally exercise tolerance test were conducted 40-45 age group 11 in number, 46-50 age group in number.

GRAPH 1

DISTRIBUTION OF PATIENTS ACCORDING TO AGE GROUP

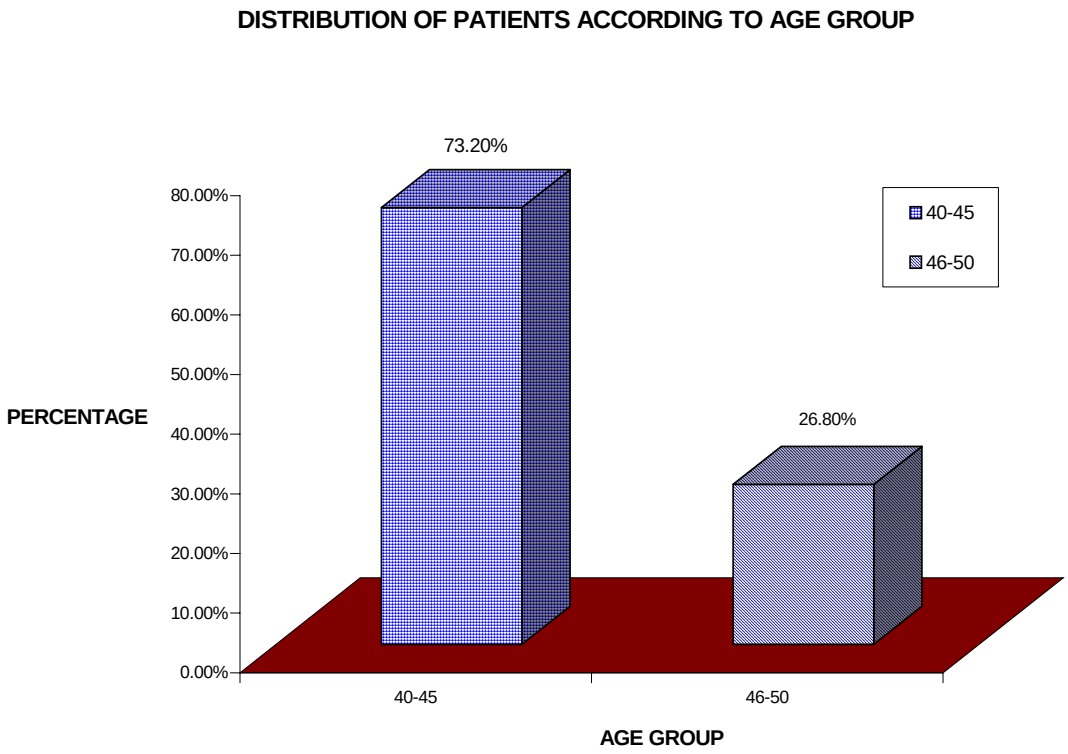


TABLE – 2

DISTRIBUTION OF PATIENTS ACCORDING TO THEIR WALKING DISTANCE 12 MINUTES IN TMW AND CW

Number of patients inTMW	Number of patients in CW	Walking Distance in (M)
7	11	840-939
8	4	940-1040

Table -2 shows the distribution of patients according to their walking distance in 12 Minutes TMW and CW.

In corridor walking period the value of walking distance significantly increased while compare to treadmill walking in 12 minutes test respectively.

In corridor walking period, the number of values of walking distance (840-939), this walking distance covered by 11 members, the number of values of walking distance (940-1040)this walking distance covered by 4 member out of 15 subjects.

In TMW period, the number of values of walking distance (840-939) this walking distance covered by 7 members, the number of walking distance (940-1040) this walking distance covered by 8 members out of 15 subjects.

GRAPH - 2

DISTRIBUTION OF PATIENTS ACCORDING TO THEIR WALKING DISTANCE 12 MINUTES MW

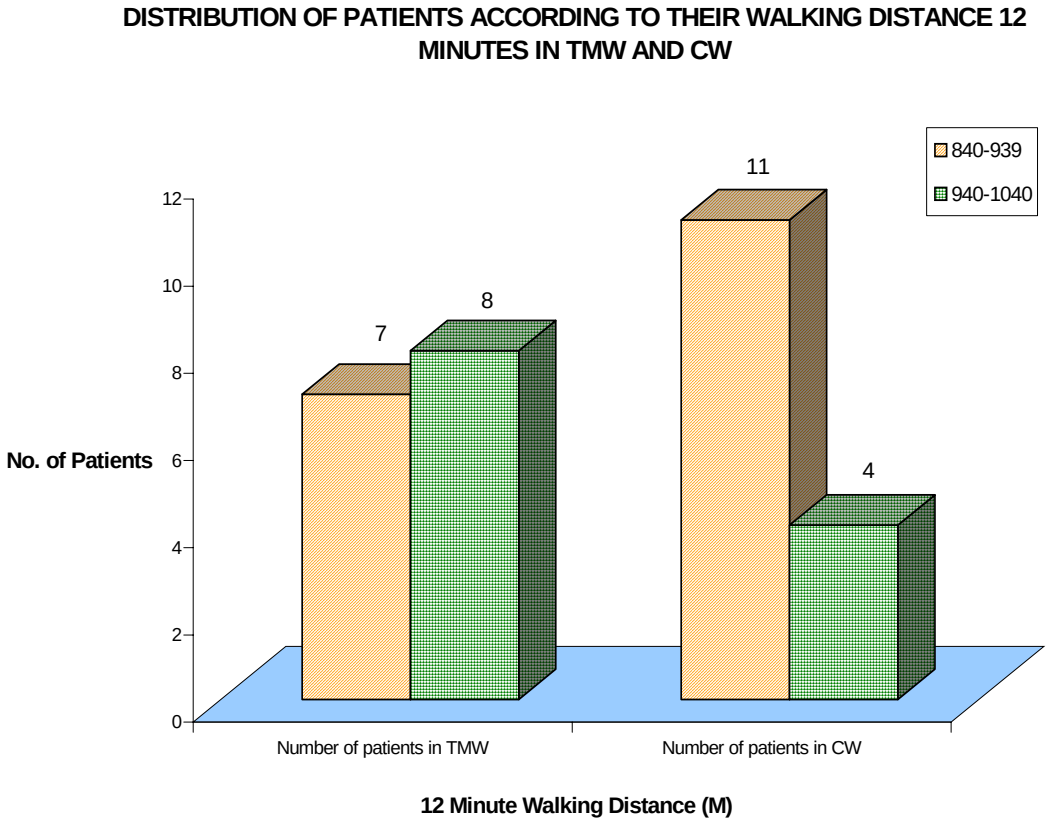


TABLE – 3

DISTRIBUTION OF PATIENT ACCORDING TO THEIR WALKING DISTANCE 6 MINUTES IN TMW AND CW

Number of Patients in TMW	Number of Patients in CW	Walking Distance in (M)
8	12	350-449
7	3	450-550

Table -3 shows the distribution of patients according to their walking distance in 6 Minutes TMW and CW.

In corridor walking period the value of walking distance significantly increased while compare to treadmill walking in 6 minutes test respectively.

In corridor walking period the value of walking distance (350-449), this walking distance covered by 12 member out of 15 subjects, the number of walking distance value (450-550) this walking distance covered by 3 member out of 15 subjects.

In TMW period, the number of values of walking distance (350-449), this distance covered by 8 member out of 15 subjects, the number of value walking distance (450-550) this walking distance covered by 7 member out of 15 subjects.

GRAPH - 3

DISTRIBUTION OF PATIENT ACCORDING TO THEIR WALKING DISTANCE 6 MINUTES

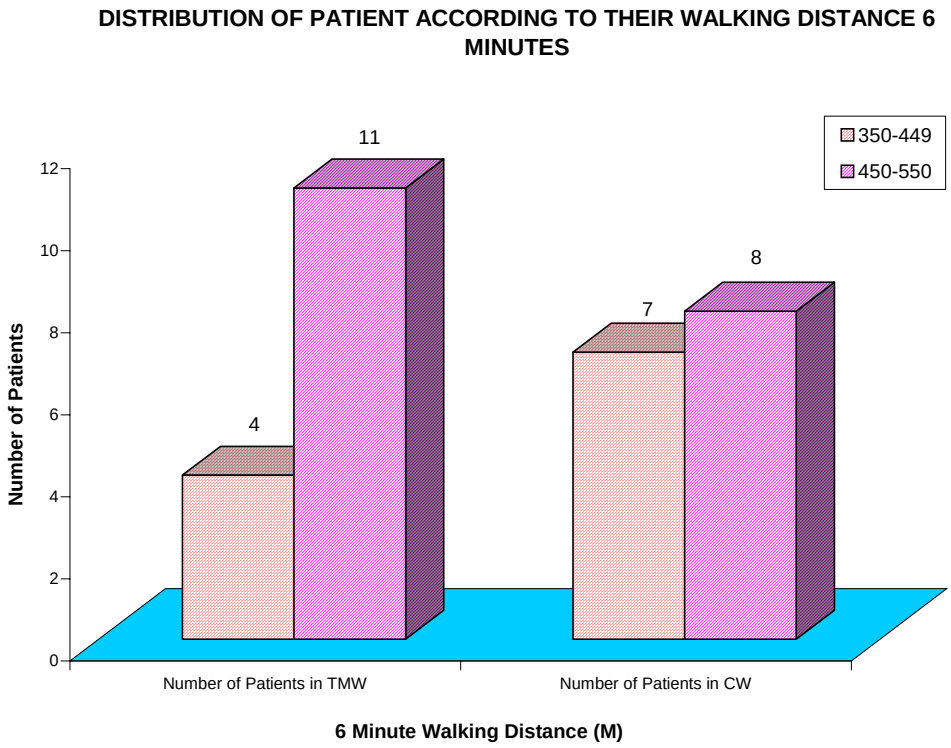


TABLE – 4

DISTRIBUTIN OF PATIENT ACCORDING TO THEIR WALKING DISTANCE 2 MINUTES IN TMW AND CW

Number of Patients in TMW	Number of Patients in CW	Walking Distance in (M)
4	7	100-139
11	8	140-180

Table -4 shows the distribution of patients according to their walking distance in 2 Minutes CW and TMW.

In corridor walking period the value of walking distance significantly increased while compare to treadmill walking in 2 minutes test respectively.

In corridor walking period the number of value of walking distance (100-139), this walking distance covered by 7 member out of 15 subjects. The number of values of walking distance (140-180) this walking distance covered by 8 member out of 15 subjects.

In TMW period, the number of values of walking distance 100-139), this walking distance covered by 4 member out of 15 subjects, the number of values in (140-180) this walking distance covered by 11 member out of 15 subjects.

GRAPH – 4

DISTRIBUTIN OF PATIENT ACCORDING TO THEIR WALKING DISTANCE 2 MINUTES

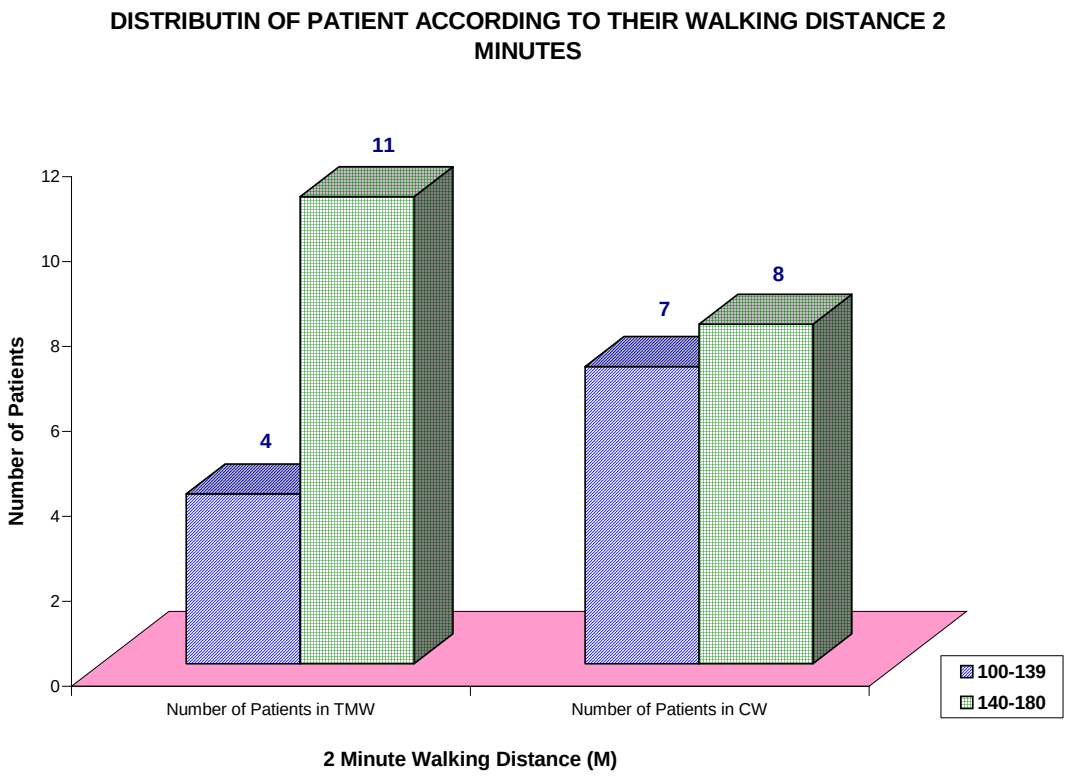


TABLE – 5

DISTRIBUTION OF PATIENT ACCORDING TO THEIR HEART RATE IN 12 MINUTES TMW AND CW

Number of Patients in TMW	Number of Patients in CW	Heart Rate per minute
0	0	110-119
14	8	120-129
1	7	130-139

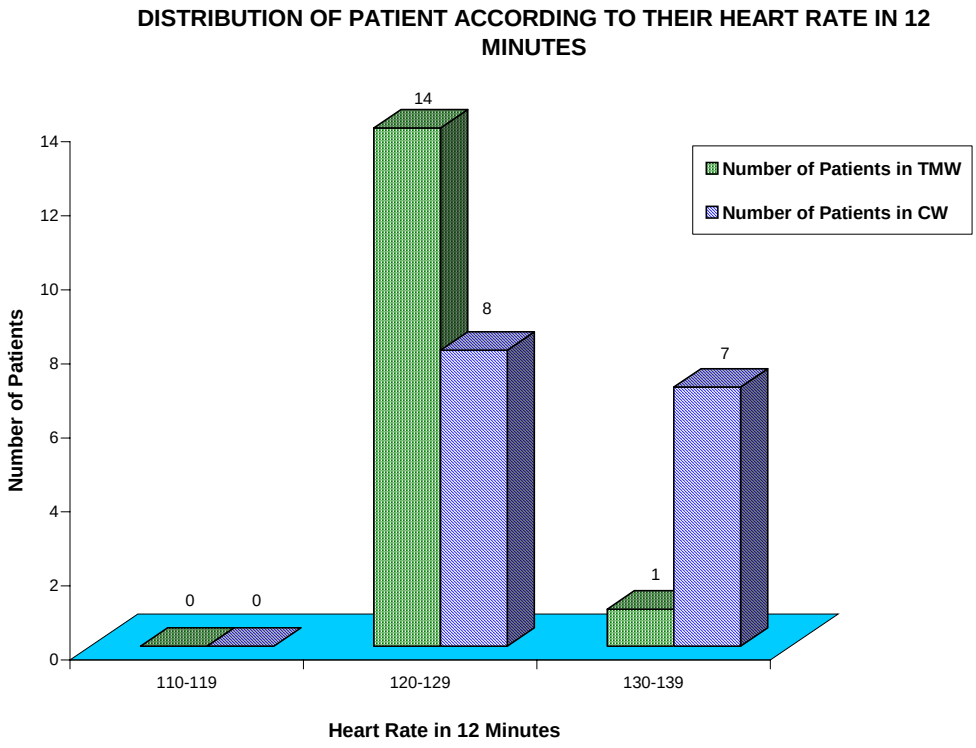
Table – 5 shows the distribution of patient according to their heart rate in 12 minutes TMW and CW

In corridor walking period, the number of values of heart rate (110-119), 0 in total number of subjects. The number of the values (120-129), 8 in total number of patients. The number of values (130-139), 7 in total number.

In treadmill walking period the number of values of heart rate (110-119). 0 in total number of subjects. The number of the values (120-129), 14 in total number of patients. The number of values (130-139), 1 in total number.

GRAPH – 5

DISTRIBUTION OF PATIENT ACCORDING TO THEIR HEART RATE IN 12 MINUTES



TABLE– 6

DISTRIBUTION OF PATIENT ACCORDING TO THEIR HEART RATE IN 6 MINUTES TMW AND CW

Number of Patients in TMW	Number of Patients in CW	Heart Rate per minute
2	0	99-109
7	5	110-119
6	10	120-129

Table – 6 shows the distribution of patient according to their heart rate in 6 minutes TMW and CW

In corridor walking period, the number of values of heart rate (99-109), recorded from 0 member out of 15 subjects, the number of the values of heart rate (110-119), recorded from 5 member 8 , the number of values of heart rate (120-129) recorded from 10 member out of 15 subject.

In treadmill walking period the number of values of heart rate (99-109). recorded from 2 member out of 15 subjects, the number of the values of heart rate (110-119), recorded from 7 member, the number of values of heart rate (120-129) recorded 6 member out of 15 subject.

GRAPH – 6

DISTRIBUTION OF PATIENT ACCORDING TO THEIR HEART RATE IN 6 MINUTES

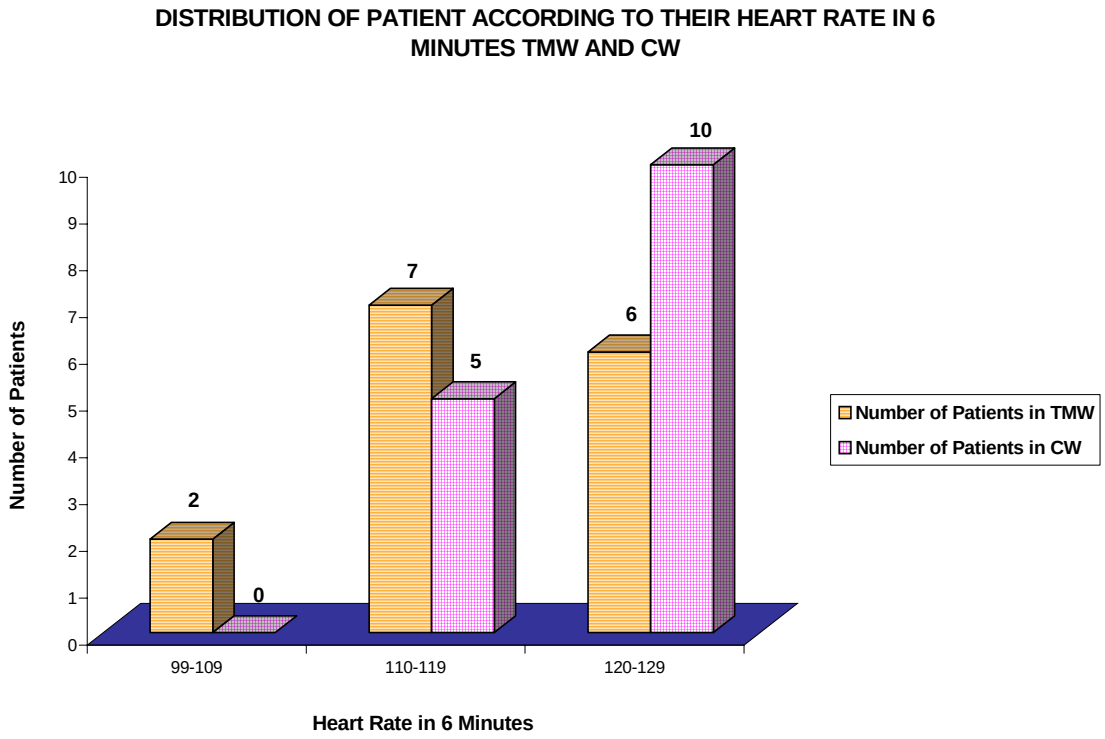


TABLE -7

DISTRIBUTION OF PATIENT ACCORDING TO THEIR HEART RATE IN 2 MINUTES TMW AND CW

Number of Patients in TMW	Number of Patients in CW	Heart Rate per minute
14	3	99-109
1	11	110-119
0	1	120-129

Table – 7 shows the distribution of patient according to their heart rate in 2 minutes TMW and CW

In corridor walking period, the number of values of heart rate (99-109), recorded from 3 member out of 15 subjects, the number of heart rate values (110-119), recorded from 11 member, , the number of values of heart rate (120-129) recorded from 1 member out of 15 subject.

In treadmill walking period, the number of values of heart rate (99-109). recorded from 14 member out of 15 subjects, the number of the values of heart rate (110-119), recorded from 1 member, the number of values of heart rate (120-129) recorded 0 member in total member.

GRAPH – 7

DISTRIBUTION OF PATIENT ACCORDING TO THEIR HEART RATE IN 2 MINUTES

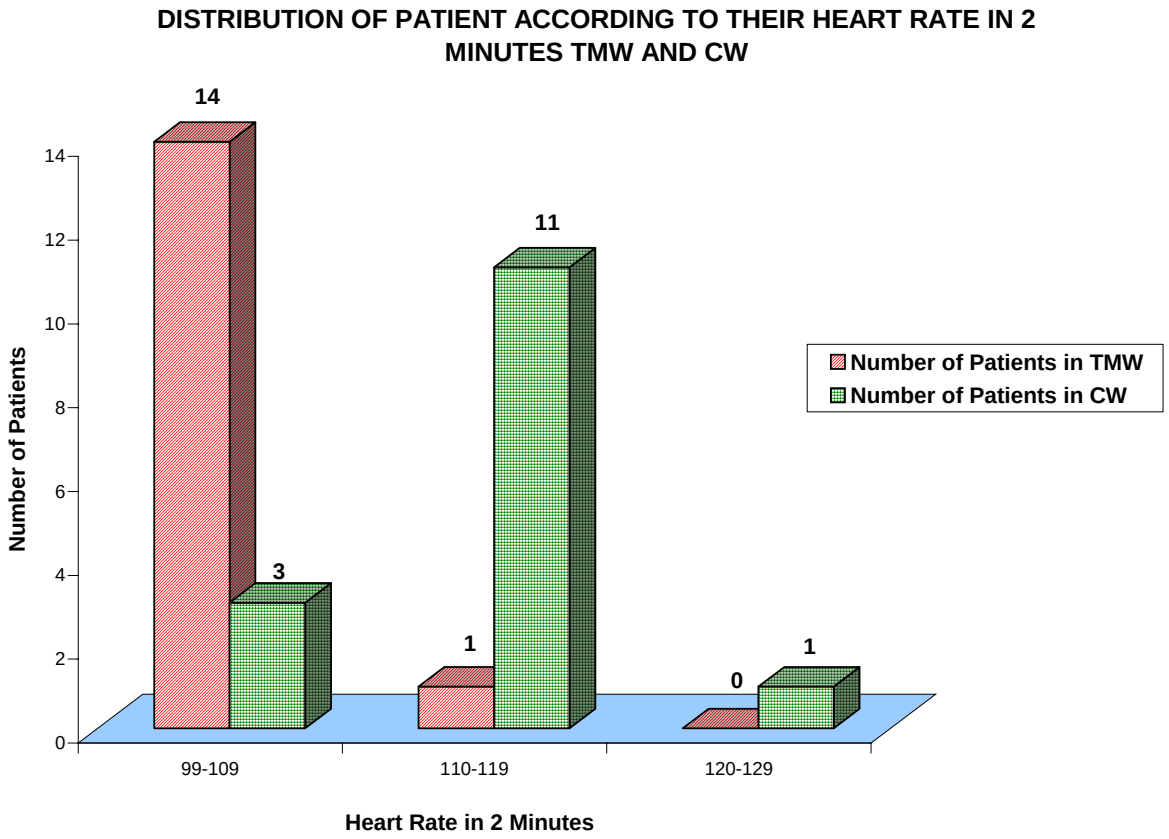


TABLE – 8

DISTRIBUTION OF PATIENT ACCORDING TO THEIR HEART RATE OF PERCEIVED EXERTION SCALE (BORG SCALE) IN TMW AND CW

Number of Patients in TMW	Number of Patients in CW	Borg Scale
6	5	8-9
8	7	10-11
1	3	12-13

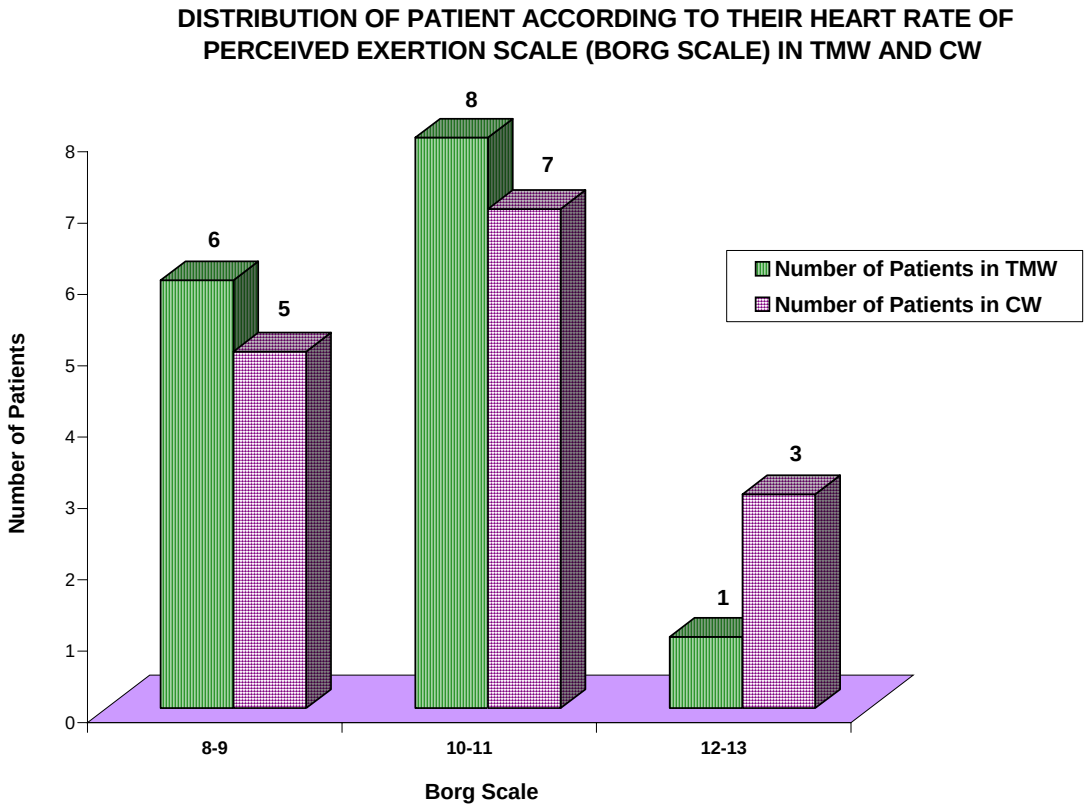
Table – 8 shows the distribution of patients rating perceived exertion scale (Borg scale) in TMW and CW

In corridor walking value (8-9) were 5 subject of total group, (10-11) in 7 in number and (12-13) 3 in subjects of total group.

In treadmill values (8-9) were 6 subjects, (10-11) in 8 number and (12-13) in 1 in number of total group.

GRAPH – 8

DISTRIBUTION OF PATIENT ACCORDING TO THEIR HEART RATE OF PERCEIVED EXERTION IN TMW AND CW



WALKING DISTANCE

TABLE – 1

DISTRIBUTION OF MEAN AND S.D OF CW AND TMW OF WALKING DISTANCE VALUES IN (12 MIN) OF PATIENTS

S.NO	TMW		CW	
1	**Mean**	**SD**	**Mean**	**SD**
	913.3	20.9	943.1	19.03

Table shows that Mean and Standard Deviation of (12 mint) walking distance.

In 12 minute TM walking distance of mean were 913.3 and SD 20.9.

In 12 minute Corridor Walking distance mean were 943.1 and SD 19.03.

TABLE 2

DISTRIBUTION OF MEAN AND S.D OF CW AND TMW OF WALKING DISTANCE VALUES IN (6 MIN) OF PATIENTS

S.NO	TMW		CW	
1	**Mean**	**SD**	**Mean**	**SD**
	419.6	22.15	446.4	19.01

Table shows that Mean and Standard Deviation of (6 mint) walking distance of CW and TMW

In 6 minute treadmill walking distance of mean were 419.6 and Standard Deviation 22.15.

In 6 minute Corridor Walking distance mean were 446.4 and SD 19.01 this results presented graphically in figures.

TABLE 3

DISTRIBUTION OF MEAN AND S.D OF CW AND TMW OF WALKING DISTANCE VALUES IN (2MIN) OF PATIENTS

S.NO	TMW		CW	
1	**Mean**	**SD**	**Mean**	**SD**
	141.1	7.67	149.2	8.52

Table shows that Mean and Standard Deviation of (2 mint) walking distance of CW and TMW.

In 2 minute TM walking distance of mean were 141.1 and SD were 22.15 this results presented graphically in figures.

In 2 minute Corridor Walking distance mean were 149.2 and SD were 8.52 this results presented graphically in figures.

GRAPH – 9

DISTRIBUTION OF MEAN AND S.D OF WALKING DISTANCE 12,6,2 MINUTES IN CW AND TMW

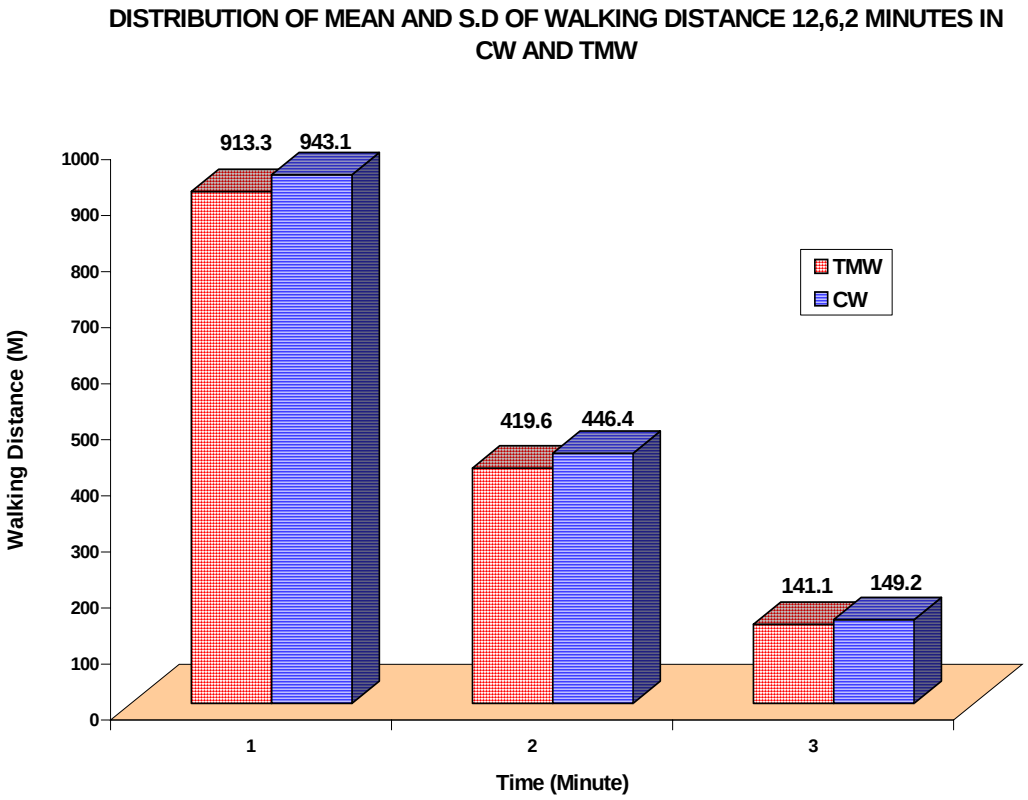


TABLE 4

DISTRIBUTION OF MEAN AND S.D OF CW AND TMW OF HEART RATE VALUES IN 12 MINUTE OF PATIENTS

S.NO	TMW		CW	
1	**Mean**	**SD**	**Mean**	**SD**
	129.2	4.36	125.17	3.79

This table shows that Mean and Standard Deviation of heart rate value 12 minute of the patient.

In12 minute treadmill walking heart rate value of mean 129.2 SD 4.36.

In 12 minute Corridor Walking heart rate value of mean were 125.2, SD 3.79.

TABLE 5

DISTRIBUTION OF MEAN AND S.D OF CW AND TMW OF HEART RATE VALUES IN 6 MINUTE OF PATIENTS

S.NO	TMW		CW	
1	**Mean**	**SD**	**Mean**	**SD**
	121.2	5.01	117.1	4.08

This table shows that Mean and Standard Deviation of heart rate value 6 minute of the patient.

In 6 minute treadmill walking heart rate value of mean 121.2, SD 5.01.

In 6 minute Corridor Walking heart rate value of mean were 117.1, SD 4.08.

TABLE 6

DISTRIBUTION OF MEAN AND S.D OF CW AND TMW OF HEART RATE VALUES IN 2 MINUTE OF PATIENTS

S.NO	TMW		CW	
1	**Mean**	**SD**	**Mean**	**SD**
	113	3.09	104.7	5.9

This table shows that Mean and Standard Deviation of 2 minute (heart rate).

In2 minute TM heart rate value of mean were 113, SD 3.09.

In 2 minute Corridor Walking heart rate value of mean were 104.7, SD 5.9.

GRAPH– 10

DISTRIBUTION OF MEAN AND S.D OF

HEART RATE

IN 12, 6, 2 MINUTES CW AND TMW

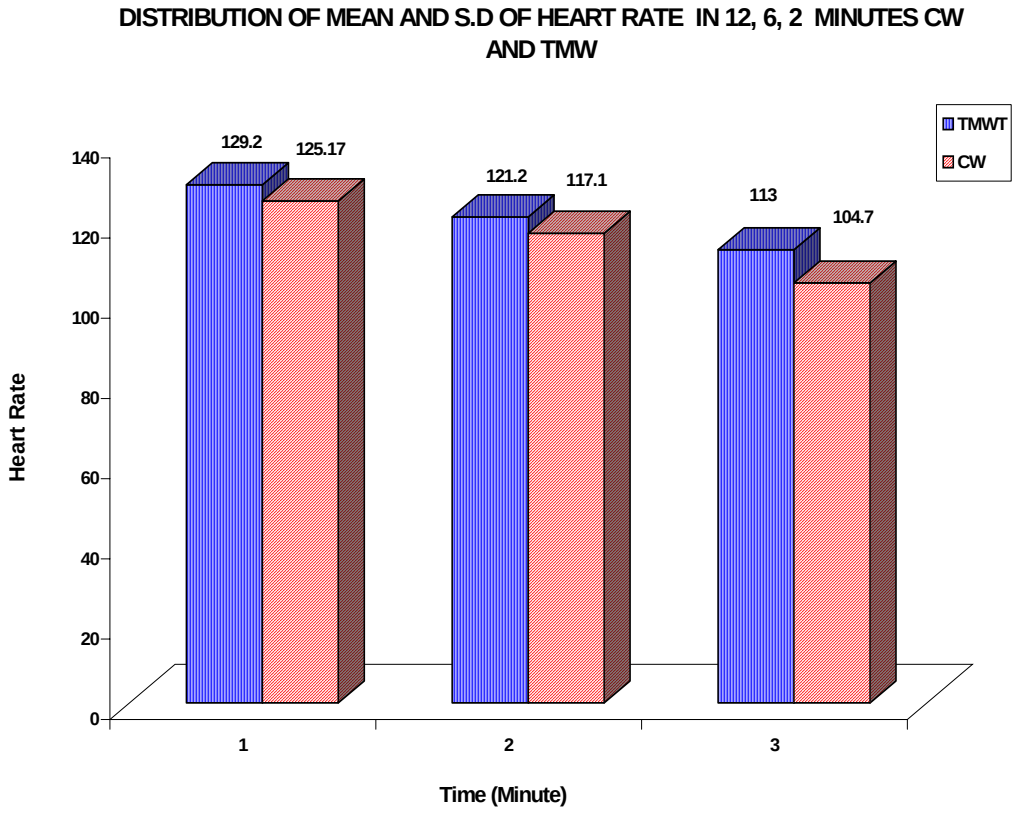


TABLE – 11

DISTRIBUTION OF MEAN AND S.D. OF CW AND TMW TEST BORG SCALE VALUE IN THE PATIENT

S.NO	TMW		CW	
1	**Mean**	**SD**	**Mean**	**SD**
	10.23	0.77	9.83	0.82

This table shows that Mean and Standard Deviation Borg scale value of the patients.

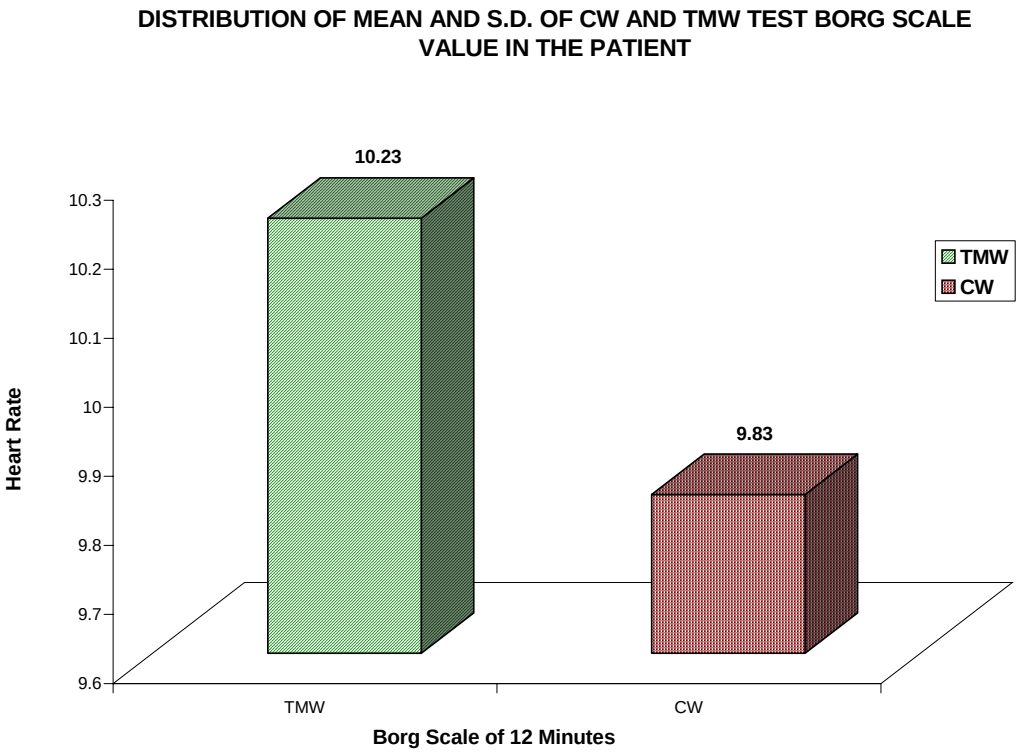
In12 minute TM walking borg scale value of mean were 10.23 and SD 0.77.

In 12 minute Corridor Walking borg scale value of mean were 9.83 and SD 0.82.

GRAPH – 11

DISTRIBUTION OF MEAN AND S.D. OF BORG SCALE

IN 12 MINUTES CW AND TMW



RESULTS

DISTRIBUTION OF MEAN AND SD OF CW AND TMW OF WALKING VALUES IN 12,6,2 MINUTES OF THE PATIENTS

Table 1

Table shows that in 12 minute treadmill walking distance of mean were 913.3 and SD 20.9

In 12 minute corridor walking distance value of mean were 943.1 and SD 19.03

Table 2

Table shows that in 6 minute treadmill walking distance of mean were 419.6 and SD 22.15

In 6 minute corridor walking distance value of mean were 446.4 and SD 19.01

Table 3

Table shows that in 2 minute treadmill walking distance of mean were 141.1 and SD 7.67

In 2 minute corridor walking distance value of mean were 149.2 and SD 8.52

DISTRIBUTION OF MEAN AND SD OF CW AND TMW OF HEART RATE VALUES IN 12,6,2 MINUTES OF THE PATIENTS

Table 4

Table shows that in 12 minute treadmill heart rate distance of mean were 129.2 and SD 4.36

In 12 minute corridor heart rate distance value of mean were 125.17 and SD 3.79

Table 5

Table shows that in 6 minute treadmill heart rate distance of mean were 121.2 and SD 5.01

In 6 minute corridor heart rate distance value of mean were 117.1 and SD 4.08

Table 6

Table shows that in 2 minute treadmill heart rate distance of mean were 113 and SD 3.09

In 2 minute corridor heart rate distance value of mean were 104.7 and SD 5.9

DISTRIBUTION OF MEAN AND SD OF CW AND TMW TEST OF BORG SCALE VALUE OF THE PATIENTS

Table 7

Table shows that in 12 minute treadmill walking Borg scale value of mean were 10.23 and SD 0.77

In 12 minute corridor walking Borg scale value of mean were 9.83 and SD 0.82.

DISCUSSION

The maximal distance walked in a given time period is frequently used as a simple method to evaluate exercise tolerance in patients suffering from chronic bronchitis. Typically patients walk on a treadmill or in a corridor at a self-paced speed little information is available about the differences between exercise performances in patients with chronic bronchitis when using the two tests. Therefore, we compared 12 minute corridor walking and 12 minute self paced treadmill walking in 11 patients with severe chronic bronchitis.

Distances covered in 12,6,2 minutes and walking speeds were significantly higher during corridor walking than during treadmill walking. Heart rate values during the two procedures were not significantly different and the same degree of breathlessness was found after both walking tests. The study illustrates that corridor walking is a simple and adequate form of exercise testing based on heart rate responses.

Corridor walking appears to be more efficient than treadmill walking in a corridor than on a treadmill corridor walking is therefore a useful method to evaluate exercise tolerance and the effects of exercise training programs in patients with chronic bronchitis.The measurement of maximal walking distances evaluates exercise tolerance in patients suffering from chronic bronchitis. Timed maximal walking distances are frequently used to monitor responses to exercise training programs.

CONCLUSION

The comparative study between corridor walking and treadmill walking suggests that there was increased walking distance in corridor walking than treadmill walking.

This study shows that corridor walking produced effective exercise tolerance in chronic bronchitis patients.

Thus the study shows that heart rate was beneficial for exertion in corridor walking than treadmill walking.

From this study it is concluded that corridor walking seems to be beneficial for chronic bronchitis patients whose lung function improved during this study.

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- Belon T.W. et al., Blood Pressure hemodynamic and thermal responses after cycling exercise, "Journal of applied Physiology", Vol.75, 1993, PP.75.

APPENDIX

NAME :

AGE :

SEX :

OCCUPATION :

CHIEF COMPLAINTS :

HISTORY :

PAST MEDICAL : Any Medication

: Any Physiotherapy

PRESENT MEDICAL : Yes/No (If Yes Details)

Yes/No (If Yes Details)

PERSONAL HISTORY : Smoking : Yes/No (If Yes Details)

Alcoholic : Yes/No(If Yes Details)

FAMILY HISTORY : Type of House: Pucca/Kutcha

No. of Persons:

SOCIO ECONOMIC HISTORY

Class-Lower: Middle: Upper

Job-Salaried: Daily Wages

Dyspnoea : Yes/No

Type of Dyspnoea :

Orthopnea: Paroxysmal Nocturnal Dyspnoea

Grade - I: II: III: IV

Cough - Dry: Productive

Sputum : Quantity

Colour

Consistency

Smell

Chest Pain : Yes/No (If Yes Details)

Fever : Yes/No (If Yes Details)

ON OBSERVATION

GENERAL APPEARANCE

Face : Pallor : Yes/No

: Flaring of Nostrils : Yes/No

: Pursed Lips Breathing : Yes/No

: Central Cyanosis : Yes/No

Neck : Acting of Accessory : Yes/No

Muscles

Extremities

Oedema : Yes/No

Clubbing : Yes/No

Tremor : Yes/No

Chest

Barrel Chest : Yes/No

ON EXAMINATION

Vital Signs

Blood Pressure :

Pulse Rate :

Temperature :

Respiratory Rate :

Height : ---------- Cm

Weight : ---------- Kg

PALPATION

Thoracic Expansion : Yes/No

Jugular Venous Pulse : Yes/No

Use of Accessory Muscles : Yes/No

PERCUSSION

: Normal

: Resonant

: Hyper Resonant

AUSCULTATION

Breath Sounds: Normal: Decreased:

Adventetious Sounds:

Wheeze : Yes/No

Crackles : Yes/No

INVESTIGATION

Chest Radiograph:

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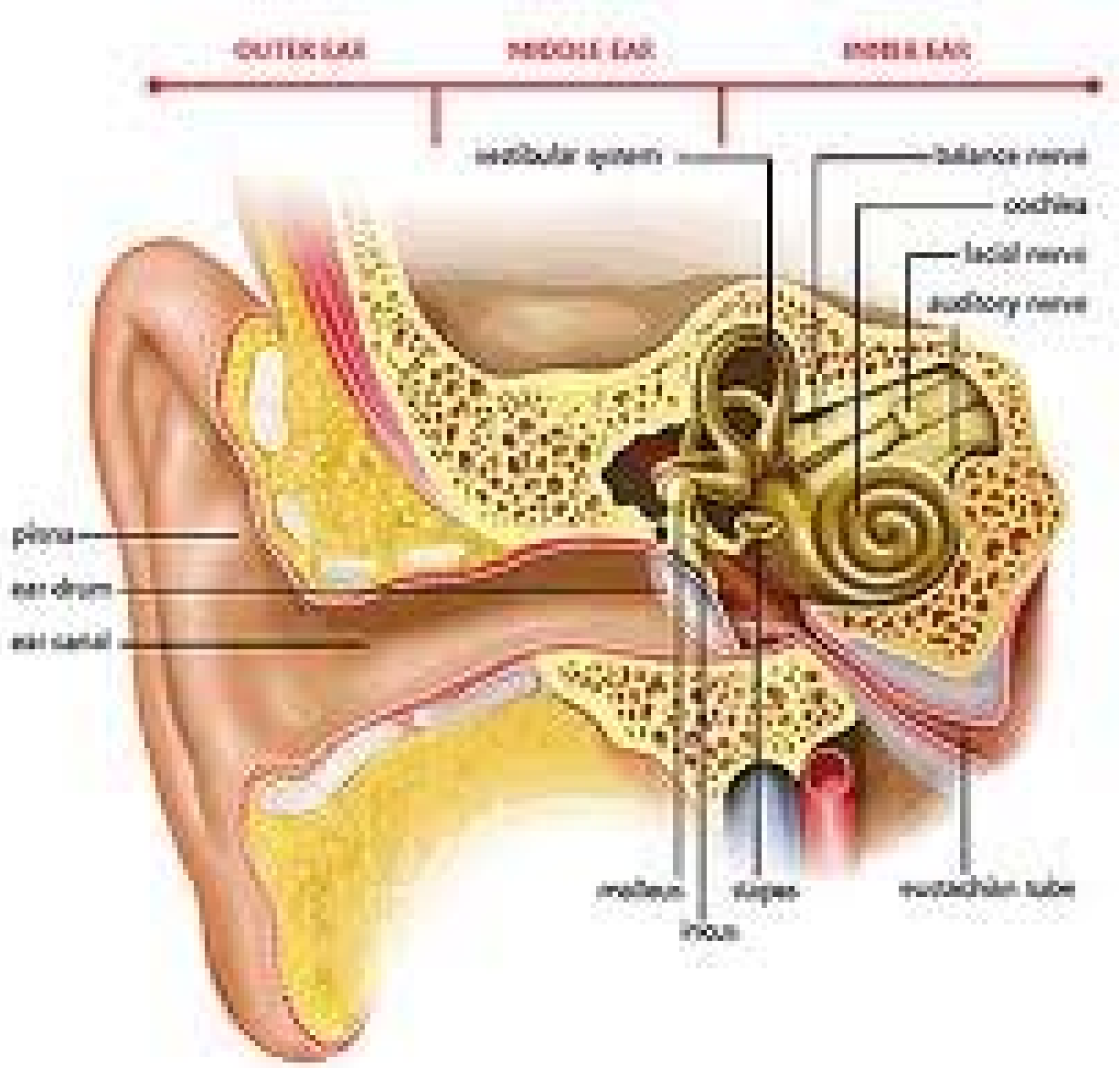
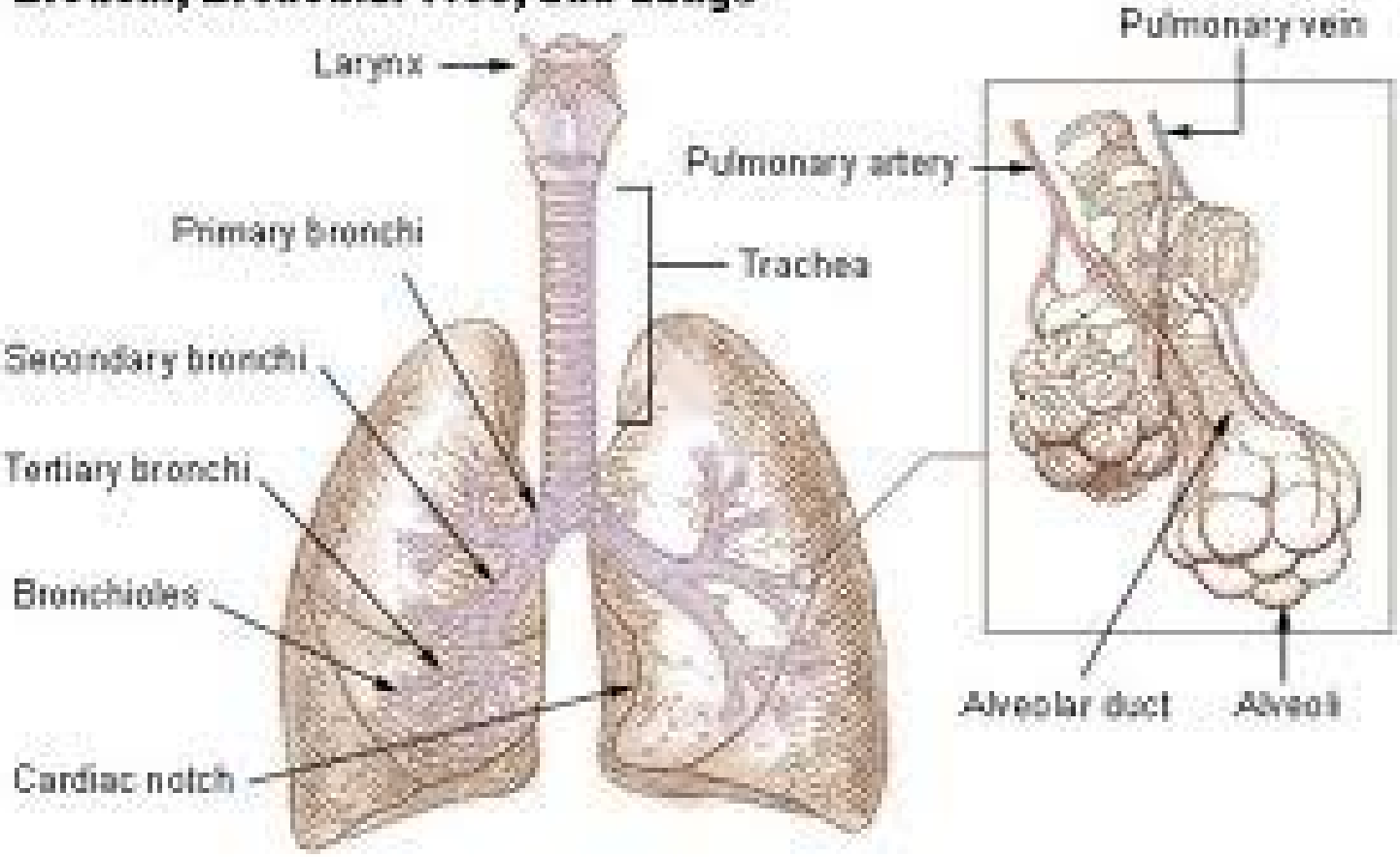
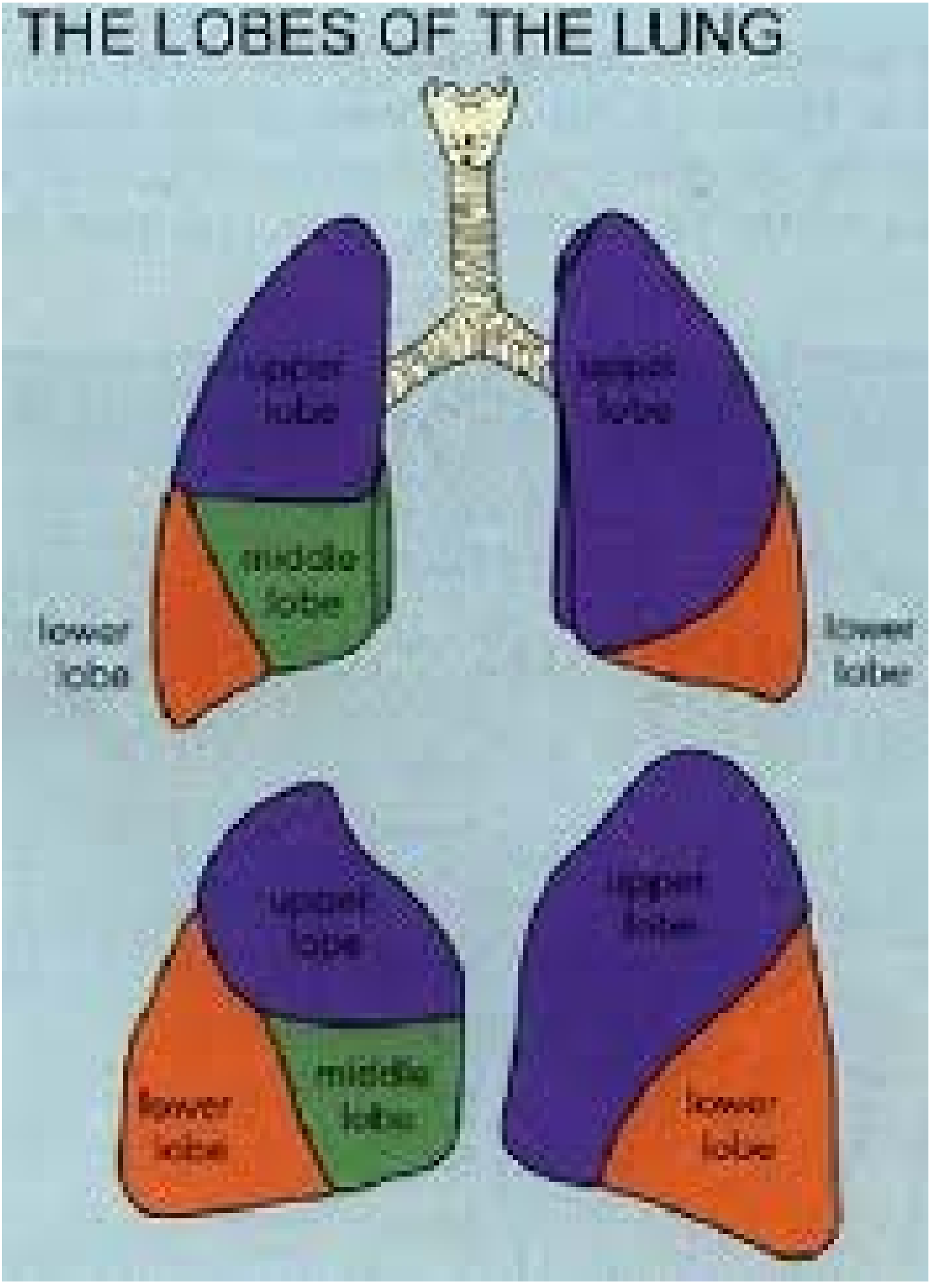
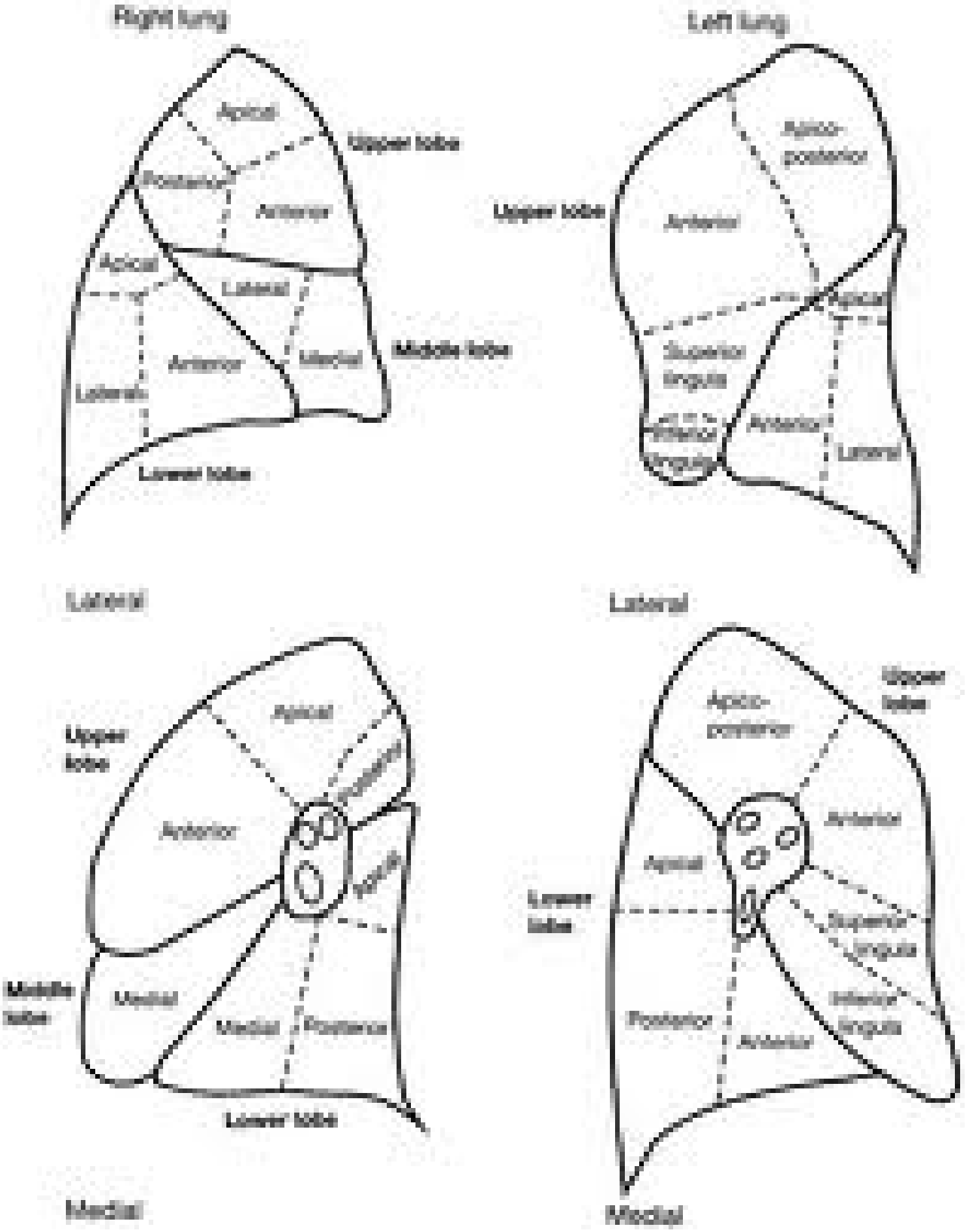
- Brompton's chest physiotherapy

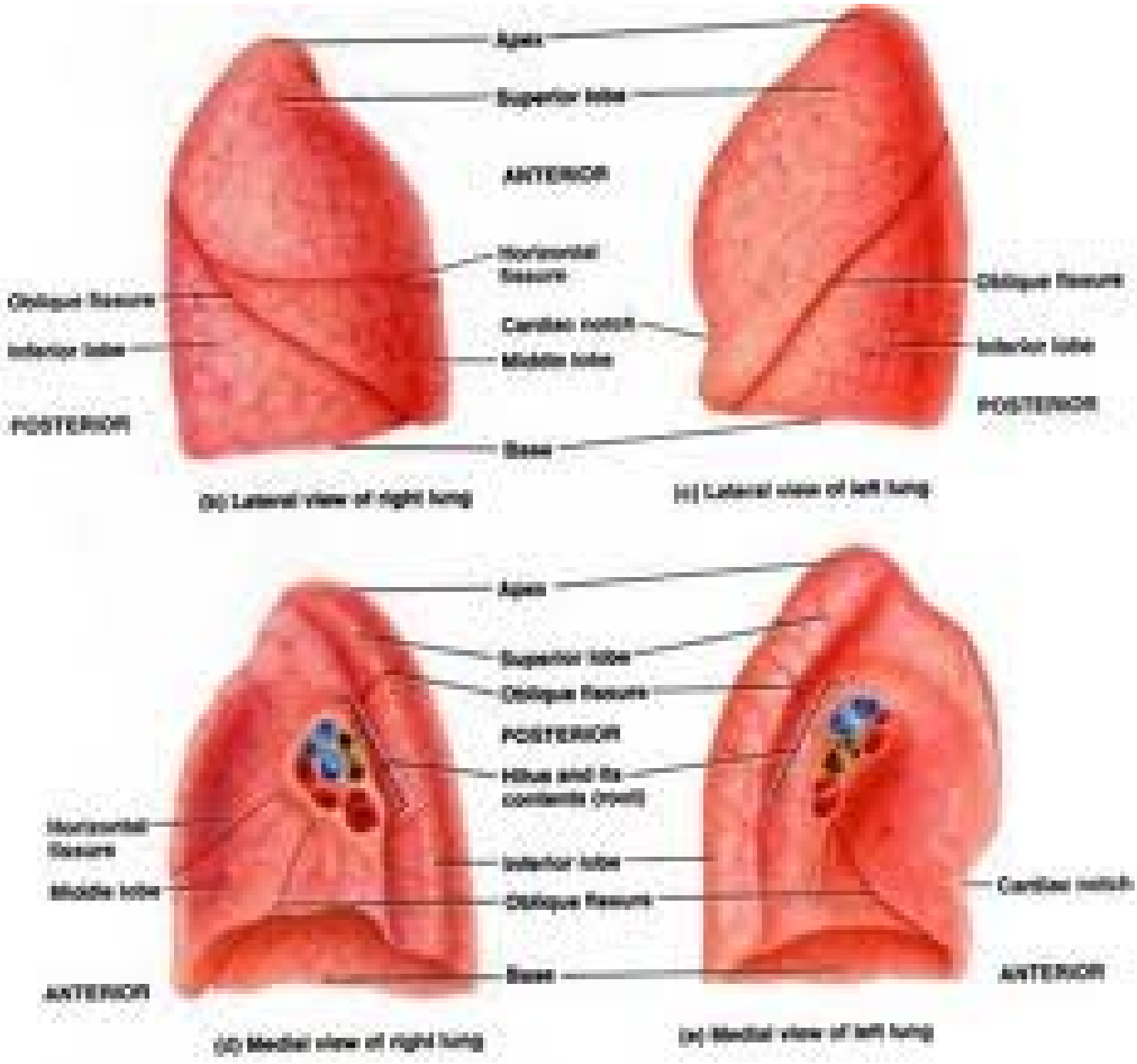

OUTER EAR
MIDDLE EAR
INNER EAR
vestibular system
balance nerve
cochlea
facial nerve
auditory nerve
pinna
ear drum
ear canal
malleus
incus
stapes
eustachian tube

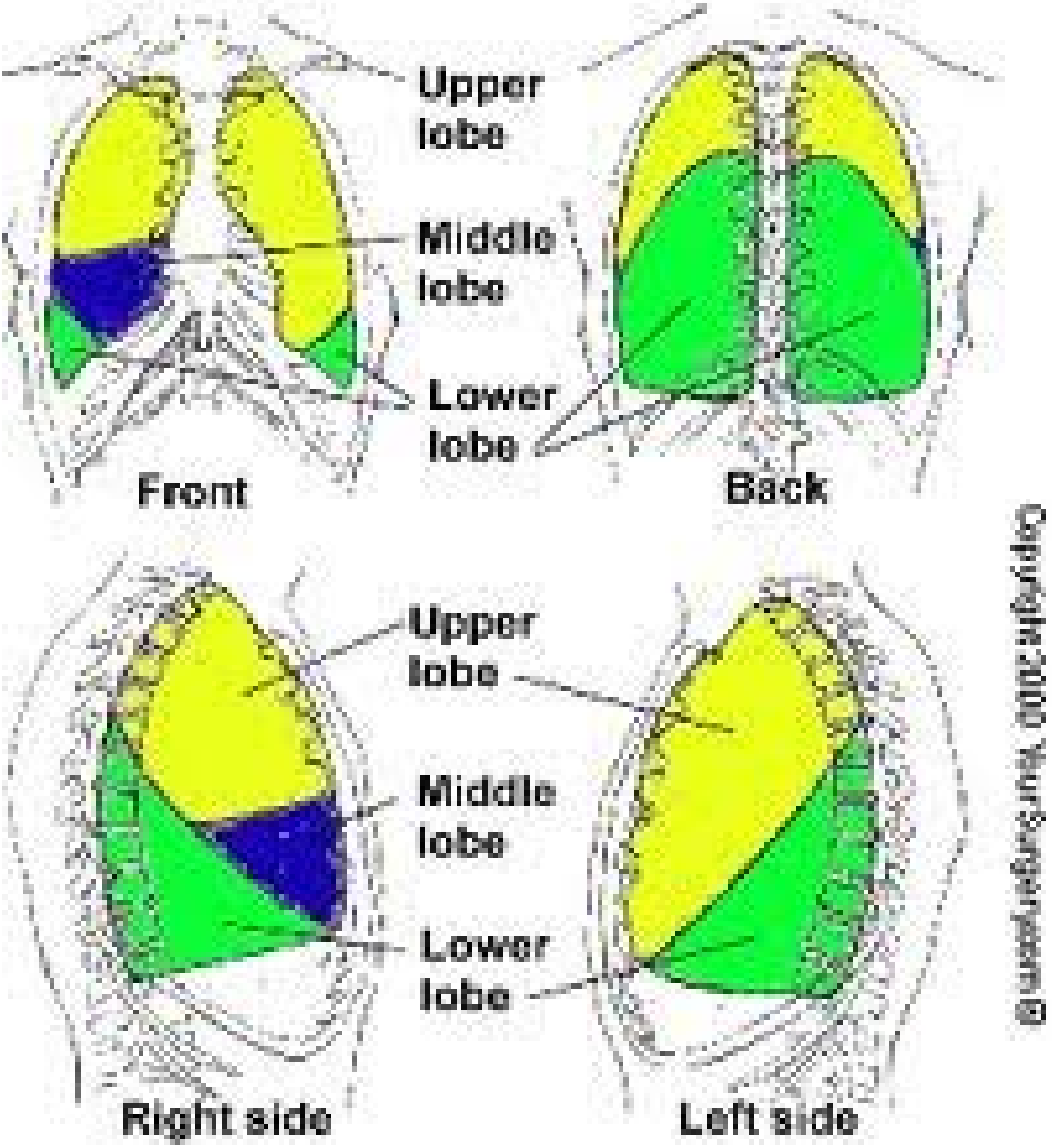
Bronchi, Bronchial Tree, and Lungs

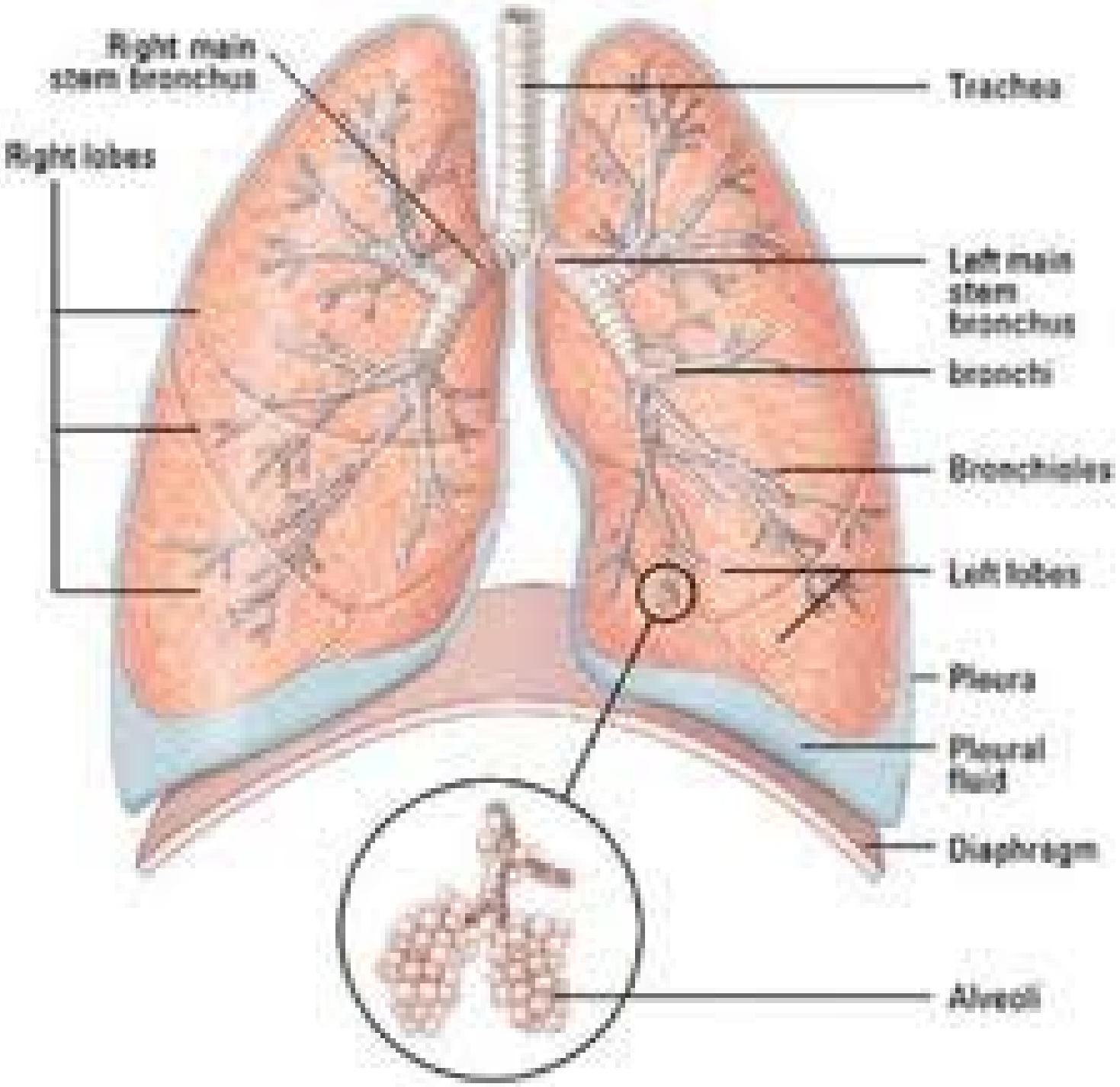


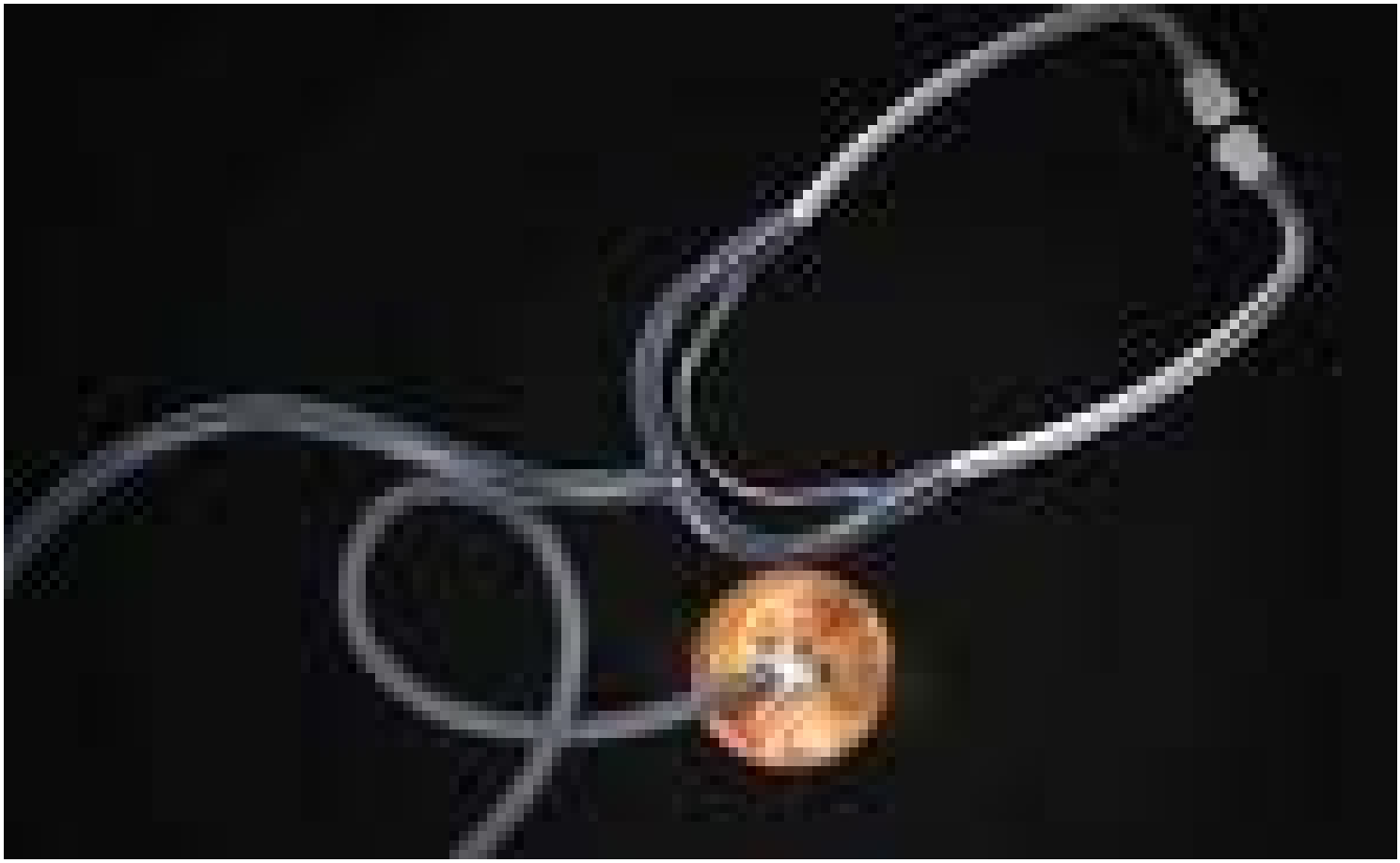

THE LOBES OF THE LUNG
upper lobe
middle lobe
lower lobe
upper lobe
lower lobe
upper lobe
middle lobe
lower lobe
upper lobe
lower lobe


Right lung
Apical
Upper lobe
Posterior
Anterior
Apical
Lateral
Anterior
Medial
Middle lobe
Lateral
Lower lobe
Left lung
Upper lobe
Apico-posterior
Anterior
Apical
Superior lingula
Inferior lingula
Anterior
Lateral
Lateral
Upper lobe
Apical
Anterior
Middle lobe
Medial
Medial
Posterior
Lower lobe
Medial
Lateral
Upper lobe
Apico-posterior
Anterior
Apical
Lower lobe
Superior lingula
Inferior lingula
Posterior
Anterior
Medial


Apex
Superior lobe
ANTERIOR
Horizontal fissure
Oblique fissure
Inferior lobe
Middle lobe
POSTERIOR
Base
(b) Lateral view of right lung
Oblique fissure
Cardiac notch
Inferior lobe
POSTERIOR
(c) Lateral view of left lung
Apex
Superior lobe
Oblique fissure
POSTERIOR
Hilus and its contents (root)
Horizontal fissure
Middle lobe
Inferior lobe
Oblique fissure
Cardiac notch
Base
ANTERIOR
ANTERIOR
(d) Medial view of right lung
(e) Medial view of left lung




Right main stem bronchus
Right lobes
Trachea
Left main stem bronchus
bronchi
Bronchioles
Left lobes
Pleura
Pleural fluid
Diaphragm
Alveoli

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